



# STEREO DYNAMIC SHELVING EQUALIZER

## The Circuit

The first stage of the Stereo Dynamic Shelving Equalizer consists of a precision, high and low *cut* filter, each with 6 selectable frequencies, and 6, 12 and 18dB/oct. switching – all frequencies on relay-switched, precision matched capacitors.

The second stage consists of a high and low *shelving* filter, each sporting +/-5.5dB of gain, and dynamic control of the shelving, with 11 frequencies on relay-switched, precision matched capacitors.

The dynamic section will let you vary the attack and release times, as well as the dynamic hold on the shelving filters, while the soft/hard switch takes you from a low, soft knee ratio, useful for subtle sculpting, to a higher, harder knee ratio, with a high end roll off on the side chain, for a bit more bite and grab.

## The Philosophy

Think of it as a high/low end management system, with a very elaborate and carefully designed high/low cut filter set-up, as well as the more prominent dynamic control strapped over a pair of shelving filters. This is done without crossovers in the signal path, which means we are not bothered by the artifacts usually associated with multi-band processing.

It has a characteristic, sonic imprint, and will even lend some weight to the perceived loudness of your program material when desired, anchoring or lifting the density, not just as a function of RMS, but by shift of focus from the sonic imprint.

In essence, it's a completely new animal in terms of design topology, features, strengths and implementation.

It was designed to put a new perspective on shaping the arch of your program material, as well as the sonics, within the full scope of the interface and electronics. If you approach it from that angle, I am convinced it will blow your mind.

## The High & low Cut Filters, Slope & Frequency

High and low cut filters, built with precision matched capacitors, and switched on relays in various configurations to achieve the desired slopes and frequencies.

These filters are first in the signal path, and setting them to "off" bypasses them completely.

## Shelving Frequency

Sets the frequency for the shelving filter, and the shelving filter only – it does not manipulate the side chain cross-overs, which means threshold and ratio stays constant when you switch them, and only the "area of effect" changes.

## Soft/Hard

- Soft setting is a very low (1:1.25) ratio/very soft knee ratio.
- Hard setting is a medium (1:5.5) ratio/medium soft knee ratio, with a subtle roll-off in the side chain.

Labelled soft/hard, because the change in settings affects the behaviour beyond the scope of just the ratio, and requires a different mindset and approach.

## Attack

The attack time of the dynamic processing. Note that the + setting is twice as fast as the second step, and that the - is twice as slow as the second last step.

Since this is a frequency split processing device, the fastest timing differs between the two bands, and the higher shelving dynamic band can be set faster without unpleasant distortion occurring, while there is simply a physical limit for the low band (as with a full bandwidth processing device).

## Release

The release time of the dynamic processing. Note that the + setting is twice as fast as the second step, and that the - is twice as slow as the second last step.

## Dynamic Hold

Adjusts the (reverse) threshold for the dynamic hold on the respective bands. There is a coarse adjustment on the tip of the dual, concentric switch controls, and a fine adjustment on the ring. I recommend keeping the fine tuning set to 12 o'clock, while doing the rough adjustment, then work from there.

The split of this function was done to accommodate the need for finer control, while keeping it on a switch, rather than use a potentiometer. The range of the finer tuning corresponds to about 2 steps on the wider range.

## Center Section

- Low Shelving In - activates the low shelving filters.
- High Shelving In - activates the high shelving filters.
- Bypass All - Hard bypasses the unit (input is jumped to output), and flips the meters to 0, regardless of the gain setting.

# **Appendix**

**Adjustments**

**Recall Sheet**

**Signal Flow Chart**

## Meter Calibration

- Turn on the unit, and leave it on for about 15 minutes to warm up.
- Set gain at 0, adjust internal "bias" trimmer until needle sits on 0.
- Set gain at +5, adjust internal "range" trimmer until needle sits on 5.

This can easily be done without the aid of a technician.

## Reference/Control Voltage Calibration

For reference voltage adjustments, measure the +12/-12V points relative to the 0v point, clearly marked on the right side of the PCB, and adjust the respective trimmers correspondingly.

This can be done without the aid of a technician, if you are comfortable handling a voltmeter.

## Gain Calibration

### Low Gain

- Bypass the high- and low cut filters, activate the low shelving filter, adjust dynamic hold to 0 (full CCW), and set gain to 0/12 o'clock.
- Send a sine at 0dBu to the unit at 100Hz, adjust the low shelving frequency to 400Hz, and set a relative reading on the output of 0dBu.
- Now, set the gain to max, and check your output reading, while you adjust the low gain PCB trimmer to a reading of 5.5dBu.
- Roll the gain control back to -5.5 to check that the gain is symmetrical to a tolerance of 1% or better.

### High Gain

- Bypass the high- and low cut filters, activate the high shelving filter, adjust dynamic hold to 0 (full CCW), and set gain to 0/12 o'clock.
- Send a sine at 0dBu to the unit at 2KHz, adjust the high shelving frequency to 1K6Hz, and get a relative reading on the output of 0dBu.
- Now, set the gain to max, and check your output reading, while you adjust the high gain PCB trimmer to a reading of 5.5dBu.
- Roll the gain control back to -5.5 to check that the gain is symmetrical to a tolerance of 1% or better.

# RECALL SHEET

**GOLLY**  
ANALOG COLORING DEVICES

26 30 45  
18  
15

6dB/oct 0dB/oct 18dB/oct  
0dB

LOW CUT Hz

LOW CUT SLOPE

LOW ATTACK

LOW RELEASE

LOW DYNAMIC CONTROL

LOW SHELVING GAIN

LOW SHELVING Hz

SOFT  
HARD

POWER

LOW SHELVING IN

HIGH SHELVING IN

BYPASS ALL

9K5 10K 10K

0dB 6dB/oct 18dB/oct

HIGH CUT SLOPE

HIGH CUT Hz

HIGH ATTACK

HIGH RELEASE

HIGH SHELVING Hz

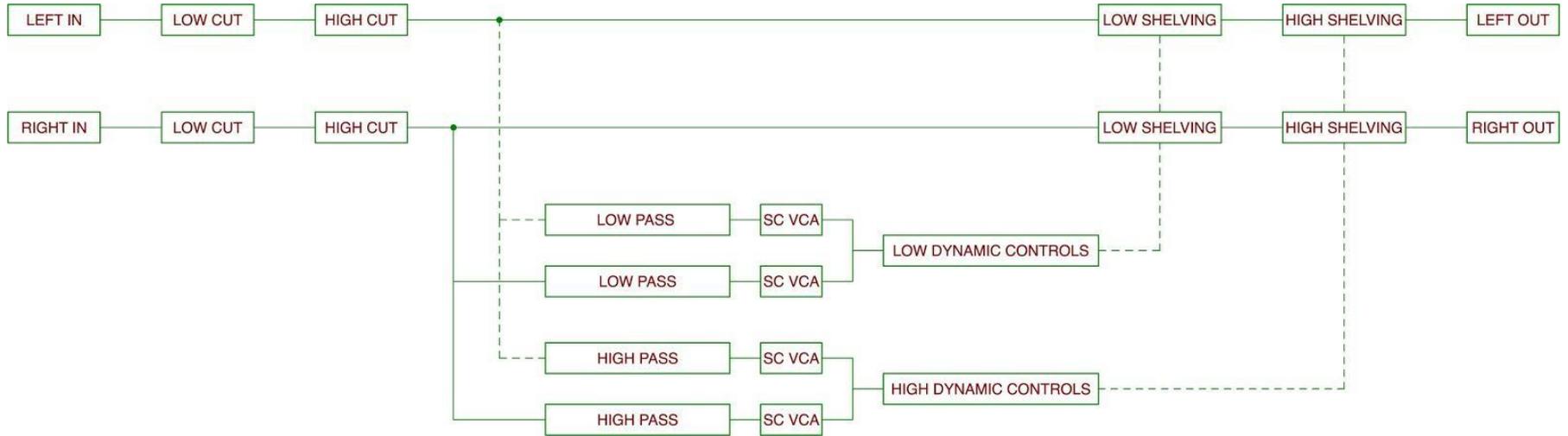
HIGH DYNAMIC CONTROL

HIGH SHELVING GAIN

SOFT  
HARD

STEREO DYNAMIC SHELVING EQUALIZER

# SIGNAL FLOW



## Info

Units are hand built by Gustav Goly in Odense, Denmark.

In the event of a problem with your Stereo Dynamic Shelving Equalizer, unplug it, and contact your dealer, or GOLY direct for repairs.

## Contact

Mail [Info@goly.dk](mailto:Info@goly.dk)

Web [www.goly.dk](http://www.goly.dk)

Phone +45 53161601

I do not answer unscheduled calls, so please book a call by mail in advance, if you need to talk.

Your unit is serial #

Gustav Goly

## Declaration of CE Conformity

The construction of this unit is in compliance with the standards and regulations of the European Community.